**Strongyloides stercoralis (strongyloidiasis)**

Case

1. 42 y/o presented w/ 3 weeks of wrosening diarrhea, abdominal pain, and fevers. He had an itchy rash over his buttocks and groin for the past 2 weeks. He lost 15 lbs. A month before his symptoms he had returned from a 3 month trip to El Salvador.

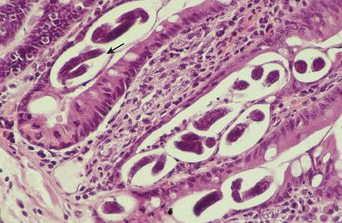
Physical exam and Labs

1. erythematous maculopapular rash on his groin and buttock area
2. 24% eosinophils

DDx

1. Amebic dysentery
2. Bacillary dysentery
3. Clostridium difficile colitis
4. Crohn disease
5. Helminth infection
   1. Hookworms
   2. Strongyloides stercoralis
   3. Ascaris lumbricoides
   4. Trichuris trichiura
6. Rationale: The unique feature regarding this case is the significant degree of eosinophilia. This limits the differential essentially to parasitic infections.

Micro Properties

1. The adult female S. stercoralis (2 to 3 mm in length) lives in the mucosa of the small intestine (duodenum and jejunum).
2. The female lays eggs that hatch into uninfective larva (rhabditiform), which are excreted in feces.
3. Strongyloides has the unique ability to replicate in the human host and produce infective larvae, which can cause reinfection (without leaving the same infected host and without any maturation).
4. Microscopic (ova and parasite) examination of freshly passed feces from a symptomatic patient usually reveals rhabditiform larvae (Prominent genital primordium (arrow) is a diagnostic feature.)
   1. 
      1. Rhabditiform larva and eggs from fecal specimen
   2. 
      1. Section of jejunal mucosa in strongyloidiasis. Note the small (2 mm long) adult worms (arrow) of Strongyloides stercoralis in crypt in jejunal mucosa.
5. Adult worms in soil contaminated with feces may produce noninfective larvae that develop into free-living larvae that eventually develop into filariform larvae (infective stage)

Epidemiology

1. Strongyloidiasis occurs worldwide, but the disease is most prevalent in humid regions of the tropical countries, where sanitation facilities are poor.
2. One can acquire infection by contact with contaminated soil🡪infective filariform larvae are able to penetrate intact skin.

Pathogenesis

1. Filariform larvae in contaminated soil penetrate the human skin and are transported to the lungs, where they enter the alveolar spaces.
   1. In a heavy infection, pulmonary migration of the filariform larvae can cause pulmonary symptoms, including coughing, wheezing, and pulmonary inflammatory infiltrates, evident on CXR.
2. Larvae are carried through the bronchial tree to the pharynx, are swallowed, and then reach the small intestine. In the small intestine they become adult female worms (adult males do not exist).
3. The adult females inhabit the upper small intestine (e.g., jejunum) where the small worms burrow into the mucosa, causing GI symptoms such as abdominal (midepigastric) pain (similar to peptic ulcer disease) and diarrhea
4. Heavy infections may lead to ulceration and sloughing of intestinal mucosa, with bloody diarrhea.
5. Blood eosinophilia is generally present during the acute and chronic stages.
6. Serum IgE is usually elevated
7. The female worms reproduce in the duodenojejunal mucosa by parthenogenesis and there deposit ova.
8. The rhabditiform larvae hatch in the mucosa and bore through the epithelium into the lumen, where they are normally passed in feces.
   1. A small number of rhabditiform larvae can mature into filariform larvae in the bowel.
      They cause reinfection by entering the body through the skin of the perianal area. Larval migration under the skin in the buttocks and groin areas causes urticarial, raised, erythematous rashes, the most common dermatologic manifestation of parasitic infections.
9. NOTE In some patients with AIDS, infection can persist for the life of the host, as Strongyloides is able to complete its life cycle entirely within the human body, unlike most other parasites. Immunosuppression may result in hyperinfection with dissemination of migrating larvae to other organs, such as the liver, heart, kidneys, or CNS. This can be associated with translocation of Gram-negative bacteria from the GI tract, causing bacteremia (septic shock) and even meningitis.

Treatment

1. Treatment of all forms of strongyloidiasis is **ivermectin**, with thiabendazole as an alternative.
2. Albendazole has also been used. All patients who are infected should be treated, especially those at risk of disseminated strongyloidiasis.

Prevention

1. There is no vaccine available currently.
2. Avoiding walking barefoot in highly endemic areas may reduce exposure, as this is a potential route of infection.